Claims

What is claimed is:

1. A method for controlling congestion at an output from a node in a data communications network wherein data is transmitted in packets, each packet having a discardability characteristic, said method comprising the steps of:

establishing a set of available, alternative discard strategies for packets having different discardability characteristics;

maintaining a profile of packets recently received at the output, the profile reflecting the discardability characteristics of said packets;

monitoring the output to detect the onset of congestion;

upon detection of congestion, using the profile to select an initial discard strategy; and

initiating the selected initial discard strategy.

2. A method as set forth in claim 1 further including the steps of:

continuing to monitor the degree of congestion at the output; and

selecting and initiating one or more subsequent discard strategies as the degree of congestion changes.

3. A method as set forth in claim 2 further including the step of terminating the currently initiated discard strategy in response to a determination that congestion no longer exists at the output.

4. A method as set forth either in claim 2 or claim 3 wherein each successively initiated discard strategy is intended to result in the discard of fewer packets than the previously initiated discard strategy.

5. A method as set forth in claim 4 wherein the step of maintaining a profile further comprises the steps of:

maintaining a count of the number of packets actually stored in an output buffer at the output;

maintaining counts of the number of said packets which would have been stored in the output buffer if different discard strategies in a set of available discard strategies had been in effect during the receipt of the packets actually stored in the output buffer.

6. A method as set forth in claim 5 wherein the step of selecting an initial discard strategy further comprises the step of comparing each of said maintained counts to a predetermined threshold and selecting the discard strategy associated with the count closest to but greater than the predetermined threshold.

7. A method as set forth in claim 6 wherein the step of selecting and initiating one or more subsequent discard strategies further comprises the steps of:

monitoring the count associated with the currently initiated discard

strategy; and

selecting a different discard strategy when the monitored count falls below the predetermined threshold.

8. A system for controlling congestion at an output buffer in a node in a packet data communications network, said system comprising:

a first counter for maintaining a count *n* of the number of packets actually stored in the output buffer;

a plurality of additional counters, each additional counter being associated with a different predetermined discard strategy and maintaining a count of the number of packets which would have been stored in the ouput buffer had the associated discard strategy been in effect during receipt of the last *n* packets;

discard initiation logic for generating a congestion-detected signal when the count *n* exceeds a predetermined high threshold;

discard strategy selection logic for selecting and initiating one or more sequential discard strategies as a function of the counts maintained in said plurality of additional counters; and

discard termination logic for terminating discarding of packets when the count *n* falls below a predetermined low threshold.

9. A system for controlling congestion as set forth in claim 8 wherein said discard strategy logic further comprises:

compare logic for comparing the count in each of said additional counters to a predetermined intermediate threshold; and

selection logic for initially selecting the discard strategy associated with the additional counter having a counter closest to and greater then the predetermined intermediate threshold.

10. A system for controlling congestion as set forth in claim 9 wherein said discard strategy logic further comprises logic for detecting when the count associated with the currently selected discard strategy has fallen below the predetermined intermediate threshold and for selecting a diffferent discard strategy to be initiated.